I. AMENDMENTS TO THE CLAIMS:

Kindly amend claims 1-12 and 15 as follows.

The following Listing of Claims replaces all prior listings, or versions, of claims in the above-captioned application.

Listing of Claims:

1. (Currently Amended) A free curved surface precision machining tool for precision-machining a surface to be machined with athe lower end in contact therewith by rotation around a verticalan axis z of a tool body of the precision machining tool, the precision machining tool comprising:

a drum-shaped tool having an orthogonal axis x orthogonal to the vertical axis z of the tool body and rotationally driven around the orthogonal axis x,

wherein the drum-shaped tool has a convex machining surface in the form of an arcuate rotary body obtained by rotating an arc of a radius r with the center of the arc at the intersection O between the vertical axis z and the orthogonal axis x around the orthogonal axis x, whereby the convex machining surface contacts the surface to be machined to precision-machine the surface to be machinedlatter, while the convex machining surface is rotated around the orthogonal axis x so as to disperse athe machining position of the convex machining surface.

2. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 1, wherein the radius r is set to be smaller than athe maximum radius R of the convex machining surface from the orthogonal axis x, whereby the position control of a machining trajectory is performed at the center O of rotation of the arc.

3. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 1, wherein the radius r is set to be larger than athe

maximum radius R of the convex machining surface from the orthogonal axis x, whereby ~~the~~ position control of a machining trajectory is performed at a~~the~~ center A of a~~the~~ lowest arc.

4. (Currently Amended) The free curved surface precision machining tool according to claim 1, wherein the convex machining surface of the drum-shaped tool is provided by ~~made of~~ a grindstone or a cutter.

5. (Currently Amended) The free curved surface precision machining tool according to claim 4, wherein the convex machining surface is provided by the grindstone that includes a metal in a~~its~~ bonding material of the grindstone.

6. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 1, further comprising a non-machining section for protecting the lower end of the convex machining surface without direct involvement in machining, wherein the non-machining section is~~being~~ adjacent to the convex machining surface of the drum-shaped tool.

7. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 6, wherein the non-machining section is made of a first material that wears~~wearing~~ out more easily than a grindstone bonding material so as not to damage the surface to be machined, and the first material of the non-machining section includes a conductive material ~~in its material~~.

8. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 1, further comprising an impeller disposed on both sides or on one side of the drum-shaped tool and a flow channel disposed to emit~~for emitting~~ a jet of fluid to the impeller in the rotative direction, wherein the drum-shaped tool is rotationally driven around the orthogonal axis x.

9. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 1, further comprising a belt in contact with an~~the~~ outer peripheral surface of the drum-shaped tool and a pulley for holding the belt between the pulley and the drum-shaped tool, wherein the drum-shaped tool is rotationally driven around the orthogonal axis x by rotation of the belt.

10. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 9, wherein the belt has a polishing surface on a~~the~~ side in contact with the outer peripheral surface of the drum-shaped tool so as to correct the convex machining surface of the drum-shaped tool as soon as the drum-shaped tool begins to be rotationally driven.

11. (Withdrawn and Currently Amended) The free curved surface precision machining tool according to claim 6, further comprising a pulley in contact with an~~the~~ outer peripheral surface of the non-machining section and a belt for rotationally driving the pulley, wherein the drum-shaped tool is rotationally driven around the orthogonal axis x by rotation of the pulley.

12. (Currently Amended) The free curved surface precision machining tool according to claim 1, further comprising a driven gear disposed on both sides or on one side of the drum-shaped tool and a main driving gear disposed to drive~~for driving~~ the driven gear, wherein the main driving gear is belt-driven so as to rotationally drive the drum-shaped tool around the orthogonal axis x.

13. (Original) The free curved surface precision machining tool according to claim 1, further comprising correction means for correcting the convex machining surface of the drum-shaped tool.

14. (Withdrawn) The free curved surface precision machining tool according to claim 13, wherein the correction means is formed of grindstone, electrolysis, or discharge means or combined means thereof.

15. (Currently Amended) The free curved surface precision machining tool according to claim 13~~12~~, wherein the correction means functions simultaneously with ~~the~~ machining of material to be machined.